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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/600,833

06/23/2003

Hiroyuki Kiyoku

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23373

7590

06/16/2004

SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

DICKEY, THOMAS L

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/600,833

Applicant(s)

KIYOKU ET AL.

Examiner

Thomas L Dickey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 14-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 12 and 13 is/are rejected.
- 7) ☒ Claim(s) 6-11 is/are objected to.
- 8) ☒ Claim(s) 1-27 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/202,141.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/26/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

1. The preliminary amendment filed on 06/23/03 has been entered.
2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tanaka et al. (2001/0038,655).

### ***Election/Restrictions***

3. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group One, claim(s) 1-13, drawn to a semiconductor device.

Group Two, claim(s) 14-27, drawn to a device.

4. The inventions listed as Groups One and Two do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The Group One claims require a dissimilar substrate having first and second off angled major surfaces, a selectively grown nitride layer, and a nitride semiconductor active layer containing indium. The Group Two claims require a nitride semiconductor sub-

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strate, a nitride semiconductor structure having a nitride semiconductor active layer containing indium, and an n-side electrode. Thus it is clear that the only feature in the Group One claims that has the same or corresponding feature in the Group Two claims is the nitride semiconductor active layer containing indium. However, the advantages of a nitride semiconductor active layer containing indium, for example an InGaN active layer with a bandgap of 2.8 to 3.3 eV, to produce green or blue light, have been known for many years. See, for example, figure 1 and column 6 line 4 of Edmond et al. 5,523,589. PCT Rule 13.2 requires that a special technical feature be inventive, in addition to being common to the various inventions applicants desire to be examined in the same application. The nitride semiconductor active layer containing indium, the only feature common to applicants' two inventions, is not an inventive feature. Therefore the inventions listed as Groups One and Two do not relate to a single general inventive concept under PCT Rule 13.1.

5. During telephone conversations with David A. Klein on May 28, 2004, and June 7, 2004, a provisional election was made without traverse to prosecute the invention of Group One, claims 1-13. Applicant in replying to this Office action must make affirmation of this election. Claims 14-27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Oath/D clARATION***

6. The oath/declaration filed on 06/23/03 is acceptable.

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***Drawings***

7. The formal drawings filed on 06/23/03 are acceptable.

***Priority***

8. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/202,141, filed on 12/09/1998.

***Information Disclosure Statement***

9. The Information Disclosure Statement filed on 09/26/03 has been considered.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- A. Claims 1-5, 12, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al. (WO 97-11518 A1).

Tanaka et al. discloses a light-emitting diode nitride semiconductor device comprising a C plane sapphire dissimilar substrate 1-2-3-4 having a first major surface

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(the surface of parts 4) comprising regularly formed terrace (tops of parts 4) portions A and stepped (sides of parts 4) portions B, a surface of each terrace portion A being substantially parallel to a second major surface (the exposed surface of part 3) of the dissimilar substrate 1-2-3-4; a nitride semiconductor layer 5 selectively grown on the major surface of the dissimilar substrate 1-2-3-4 in a substantially lateral direction, and an indium-containing nitride semiconductor active layer 6 on the nitride semiconductor layer 5, wherein the first major surface is off-angled stepwise from the second major surface of the dissimilar substrate 1-2-3-4, and the nitride semiconductor layer 5 selectively grown on the major surface of the dissimilar substrate 1-2-3-4 includes laterally adjacent areas of higher and lower numbers of crystal defects (note figure 1). Note figures 1A, 2, 7A, and 7B of Tanaka et al. An English language version of Tanaka et al. (WO 97-11518 A1) recently published as Tanaka et al. (2001/0038,655). Please note, in addition to figures 1A, 2, 7A, and 7B, of WO 97-11518 A1, paragraphs 0014 and 0120-0123 of US 2001/0038,655. Note that 2001/0038,655 is a 371 of 371 of international application PCT/JP96/02663, which previously published as WO 97-11518 A1

***Allowable Subject Matter***

11. Claims 6-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**TLD**  
**06/04**



**Minhloan Tran**  
**Primary Examiner**  
**Art Unit 2826**